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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,757	02/23/2004	Xiangrong Cai	120-334	2210

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EXAMINER

PHAN, TUANKHANH D

ART UNIT	PAPER NUMBER
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2153

MAIL DATE	DELIVERY MODE
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10/17/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/784,757

Applicant(s)

CAI, XIANGRONG

Examiner

TuanKhanh Phan

Art Unit

2153

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

Claims 7 and 9 are objected to because of the following informalities: these two dependent claims should be referred to claim 6, but not claim 7. To expedite prosecution, the examiner treats claims 7 and 9 as the dependents of claim 6.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by
Watkinson (US Pat. 7,233,987).

Regarding claim 1, Watkinson teaches a method of maintaining consistent group membership data (i.e. **membership information to a group and the group relates to a services**, abstract) at a Designated Router (e.g. **104A is a designated router**, col. 6, lines 44-45) executing the Protocol Independent Multicast (PIM) protocol (i.e. **generating a corresponding PIM from the IGMP request**, col. 6, lines 20-25) including the steps of:

receiving, at the Designated Router, an IGMP membership message (i.e. **receiving the request related to membership change to a group is a form of an IGMP membership message**) from an IGMP host (col. 5, lines 35-42) operating according to the Internet Group Multicast Protocol (IGMP) protocol (col. 5, lines 35-42);

translating the IGMP membership message into a PIM membership message (i.e. translating IGMP message into PIM, col. 5, lines 10-20); and

selectively forwarding (i.e. **router 104A forwards the request towards the source of the network**, col. 4, lines 45-49) the PIM membership message to a device upstream from the Designated Router (i.e. **designated router 104A forwards upstream [route toward the source] to the intended program** col. 4, lines 45-49; col. 6, lines 53-56).

Regarding claim 2, Watkinson teaches the method according to claim 1, wherein the step of selectively forwarding further includes the steps of: determining whether the designated router is upstream from the host device (i.e. **determine the outgoing to reach address that's leading towards router; upstream is the same as determining whether the designated router is routed toward the source**; col. 8, lines 3-18); and responsive to a determination that the designated router is upstream from the host device, modifying an entry in a PIM routing table associated with the IGMP host (i.e. **the method updating forwarding table associated with the group to reflect the request**; col. 2, lines 20-22) responsive to the IGMP membership

message (i.e. **Group/source table that includes membership message needs to be updated upon any changes**; col. 7, lines 10-45).

Regarding claim 3, Watkinson teaches the method according to claim 2, wherein the IGMP membership message indicates that a member is joining a multicast group (i.e. **IGMP construct a multicast protocol**, col. 2, lines 38-43), and the step of modifying includes the step of generating and storing a PIM entry in a multicast routing table responsive to information in the IGMP membership message (col. 5, lines 35-50; col. 6, lines 15-35).

Regarding claim 5, Watkinson teaches the method of claim 1, wherein the IGMP membership message is a Leave message, indicating an identifier and network interface for a member leaving a group, and wherein the step of translating converts the Leave message to a PIM Prune message (col. 6, lines 64-67).

Regarding claim 6, Watkinson teaches a method of maintaining consistent group membership data at a Designated Router executing the Protocol Independent Multicast (PIM) protocol including the steps of:

receiving, at the Designated Router, an IGMP membership message from an IGMP Host device operating according to the Internet Group Multicast Protocol (IGMP) protocol (col. 2, lines 15-20; col. 5, lines 4-10);

determining whether an entry in a PIM routing table corresponds to information in the IGMP membership message (col. 8, lines 10-19);

translating the IGMP membership message into a PIM membership message (i.e. translating IGMP message into PIM, col. 5, lines 10-20); and

selectively forwarding the PIM membership message to a device upstream from the Designated Router (i.e. **designated router 104A forwards upstream [route toward the source] to the intended program** col. 4, lines 45-49; col. 6, lines 53-56).

Regarding claim 7, Watkinson teaches the method of claim 6, wherein the step of selectively forwarding the PIM membership message operates in response to whether the entry exists in the routing table and in response to whether the designated router is upstream from the IGMP Host device (i.e. **determine the outgoing to reach address that's leading toward router; upstream is the same as determining whether the designated router is routed toward the source**; col. 8, lines 3-18).

Regarding claim 9, Watkinson teaches the method according to claim 6, wherein the designate router forwards the PIM membership message on the network interface on which the IGMP membership message is received (col. 6, lines 25-30).

Regarding claim 10, Watkinson teaches a method of maintaining consistent group membership data at a Router executing the Protocol Independent Multicast (PIM) protocol including the steps of:

receiving a PIM membership message on a first interface, the membership message identifying a (source, group) pair (col. 5, lines 35-42);

searching a multicast routing table to determine whether an entry corresponding to the (source, group) pair and associated with a coupled IGMP Host is stored in the multicast routing table (col. 5, lines 40-45); and

selectively processing the PIM membership message responsive to whether the entry is stored in the routing table (col. 5, lines 45-51).

Regarding claim 11, Watkinson teaches the method according to claim 10, further responsive to whether the PIM membership message is addressed to the Router (col. 6, lines 40-50).

Regarding claim 12, Watkinson teaches the method according to claim 11, further including the step of only forwarding the PIM membership message if the PIM message is addressed to the Router and an entry is stored in the routing table (col. 7, lines 1-25).

Regarding claim 16, Watkinson teaches a router comprising: a routing table, the routing table including at least two entries including information for forwarding PIM multicast messages (col. 5, lines 10-40); a network interface for receiving messages from a neighboring device (col. 5, lines 10-23), the messages including IGMP Host messages (col. 5, lines 40-45); translation logic for converting IGMP Host messages received from the network interface to PIM messages (col. 5, lines 10-20); and forwarding logic for selectively forwarding the translated PIM messages to neighboring upstream devices (col. 5, lines 20-34).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 8, 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watkinson in view of Haggerty et al. (US Pat. 6,331,983).

Regarding claim 4, Watkinson teaches the method of claim 1. While the IGMP membership message could be a report message, Watkinson does not explicitly disclose the IGMP membership message is a Report message, including an identifier and network interface for a member of a group, and where the step of translating translates the Report message into a PIM Join message.

However, in the same field of endeavor of IGMP membership message, Haggerty et al. teach the IGMP membership message is a Report message, including an identifier and network interface for a member of a group, and where the step of translating translates the Report message into a PIM Join message (col. 5, lines 1-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the IGMP membership message as a report message taught by Haggerty et al. into the IGMP membership message taught by Watkinson to frequently distribute all addresses to the group multicast address.

Regarding claim 8, Watkinson teaches the method of claim 7, wherein the IGMP protocol message indicates that a member is leaving a group, and wherein the PIM membership message indicates removal of the member from the group (col. 6, lines 64-67), but does not teach wherein the method further includes the step of delaying removal of the member from the group at the designated router for a predetermined time period.

However, in the same field of endeavor of the IGMP protocol messaging, Haggerty et al. teach the step of delaying removal of the member from the group at the designated router for a predetermined time period (i.e. timer and delaying queries col. 19, lines 35-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the IGMP protocol messaging delay removal of the member from the group taught by Haggerty et al. into the member leaving a group taught by Watkinson to reduce the traffic when all messages sent simultaneously.

Regarding claim 13, Watkinson teaches the method according to claim 10, but does not teach including the step of determining whether the IGMP Host is downstream from the Router. However, in the same field of endeavor, Haggerty et al. teach IGMP host is downstream from the router (i.e. **either upstream or downstream**, col. 18, lines 21-29). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the IGMP message sent downstream taught by Haggerty et al. into IGMP host message taught by Watkinson to detect the presence of active attached multicast routers both directions (Watkinson, col. 18, lines 29-33)

Regarding claims 14-15, Watkinson teaches the method according to claim 10, Haggerty et al. further teach the step of suppressing forwarding of the PIM membership message in response to the entry being stored in the routing table and the IGMP Host not being downstream from the Router (col. 18, lines 21-29).

Conclusion

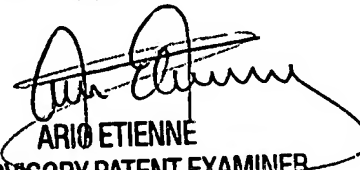
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Wu et al. US Patent 6,847,638. Jan 25, 2005. Disclosure of multicast system for forwarding desired multicast packets in a computer network.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TuanKhanh Phan whose telephone number is 571-270-3047. The examiner can normally be reached on Mon to Fri, 8:00am to 4:30pm EST, 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton B. Burgess can be reached on 571-272-3949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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